VII
Implementation

1. Intent

Adoption of the Volcano Heights Plan will satisfy an important land use regulatory requirement for making available more than 3,400 acres for the future growth of the Albuquerque urban area. Development of the Volcano Heights Area as envisioned in this Plan is expected to result in approximately 12,000 additional housing units, 30,000 residents, 5 million square feet of non-residential building containing 18,000 jobs. The total growth in the Albuquerque market is approximately 5,500 residential units and 7,000 new jobs per year. Since Volcano Heights is only a portion of the inventory of developable land, it is reasonable to expect build-out there to occur over a number of years.

City Ordinance, in Section 14-13 ROA 1994, states that the "Planned Growth Strategy [PGS] report found that the Albuquerque area faces critical challenges related to . . . timely provision of infrastructure, parks, schools, and other facilities to support new development." Section 14-13-2-3 states: "The Planned Growth Strategy, in conjunction with the Albuquerque/Bernalillo County Comprehensive Plan, shall guide the future development of the Albuquerque urban area. The Planned Growth Strategy shall serve as the comprehensive guide for this urban growth management program . . . ." PGS Bill No. F/S R-02-111(A) (Enactment No. 112-2002) identifies Adequate Public Facilities regulations as an approach to insure that facilities, such as streets, water, wastewater, hydrology, parks, and schools, are available in a timely way to support new development. This legislation states that "Adequate infrastructure and facility regulations shall be established through a future Adequate Public Facilities Ordinance (APFO)". Adequate Public Facilities regulations are a planning tool to phase and time urban growth.

The Volcano Heights Plan contains a number of recommendations related to open space; parks; natural, or "prudent line", treatment of the arroyo drainage system; expanding the buffer of the Petroglyph National Monument at the Escarpment edge; and so on, that call for recommendations regarding acquisition and funding.

The Volcano Heights Plan, as a Sector Plan, contains a number of regulations related to land use and zoning, urban design, roadway location and design, open space, landscaping, and so on. The Volcano Heights Plan attempts to set these standards at a more general level of specification. Procedures for development plan review and approval are needed that allow speedy review when consistent with the Volcano Heights Plan standards but also provide for flexibility to amend the regulatory requirements.

2. Growth Phasing and Timing

(See **Exhibit 31** *Phasing Diagram*)

It would be neither prudent nor wise to assume that development may take place in all parts of Volcano Heights concurrently. Growth does occur when a number of conditions are met, many of which have to do with the provision of infrastructure. In the past, the public sector has responded to requests from developers for facility capacity. Planned Growth Strategy Town Hall participants, however, said that they "wanted a different, more intentional approach to growth that is not reactive or piecemeal but follows carefully considered principles that are developed with a high degree of community involvement. The community needs to be more proactive . . . ." In the Volcano Heights Plan this direction is translated into a plan for the desired phasing and timing of growth.

The plan for phasing and timing of growth contains four categories:

- Pipeline projects
- Phase 1: 2006 to 2010
- Phase 2: 2010 to 2015
- Phase 3: 2015 to 2020 and beyond.

Given the practical constraints for planning, Special Assessment District and other development approvals, and infrastructure and facility construction, these are considered optimistic with regard to the years identified.

The considerations for the various phases of growth assigned to Plan subareas include the following:

- projects exempted from the Volcano Heights moratorium because of some level of preexisting development approvals;
- the phasing of the expansion of water and sewer service by the Albuquerque Bernalillo County Water Authority to Pressure Zones 3WR/4W and then to 5W;
- completion of Special Assessment District plans and approvals that will be necessary to design, finance and construct locally serving infrastructure;
- prioritization of the Volcano Cliffs Village Center including urban residential tracts as the first complete mixed-use village;
- response to fast-track development of the Albuquerque Public Schools Volcano Heights high school;
- unitary ownership of land by Longford Homes;
- allowance for the market in the Volcano Heights area to strengthen before the development of the higher density Town Center.

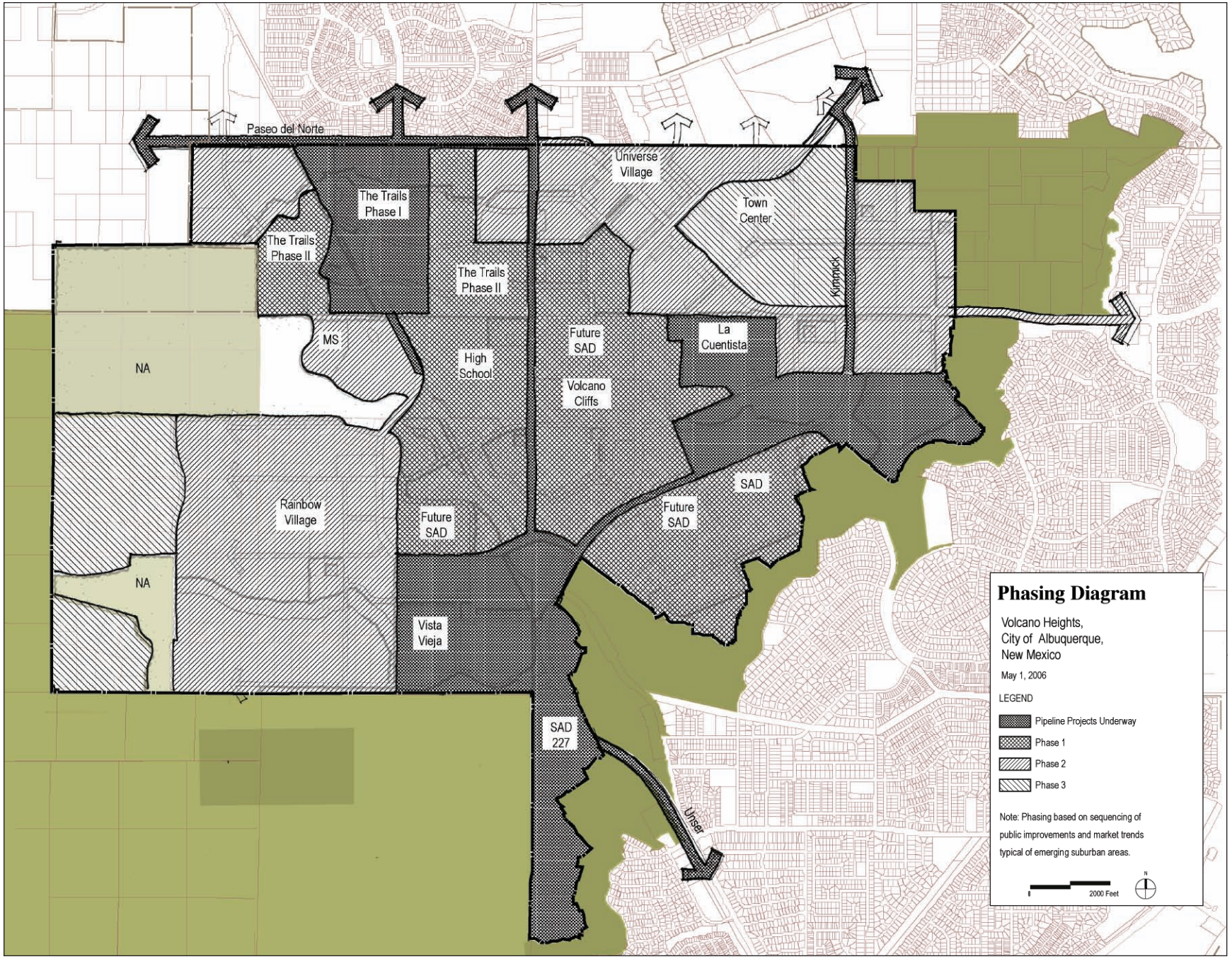
Paseo del Norte
Universe Village
The Trails Phase I
The Trails Phase II
The Trails Phase II
Town Center
Kimmick
MS
NA
High School
Future SAD
La Cuentista
Volcano Cliffs
SAD
Future SAD
Rainbow Village
Future SAD
NA
Vista Vieja
SAD 227
Unser
Phasing Diagram
Volcano Heights,
City of Albuquerque,
New Mexico
May 1, 2006
LEGEND
Pipeline Projects Underway
Phase 1
Phase 2
Phase 3
Note: Phasing based on sequencing of public improvements and market trends typical of emerging suburban areas.
2000 Feet
N

Exhibit 31

3. Adequate Public Facilities

The City of Albuquerque shall establish Adequate Public Facilities regulations with regard to school facilities and transportation infrastructure capacity in the Volcano Heights Area. This will require a formal intergovernmental agreement with the Albuquerque Public Schools.

The purposes of Adequate Public Facilities regulations are:

- To link the provision of transportation and school facilities and services with the type, amount, density, rate, and timing of development;
- To manage new growth so that it does not outpace the provision of transportation and school facilities and services according to level of service standards;
- To coordinate public facility and infrastructure construction;
- To discourage sprawl and leapfrog development;
- To encourage the types of development that incorporate the community building and design principles contained in the Volcano Heights Plan.

In order to implement Adequate Public Facilities standards for schools and transportation infrastructure in the Volcano Heights Area, the following determinations will need to be made:

- The areas and subareas within Volcano Heights to which the transportation and school facility capacity standards apply. This is addressed below regarding elementary schools.
- The service standards for school facilities and transportation infrastructure to be applied. The Mid Region Council of Governments uses Level of Service (LOS) "D" for roadway budgeting purposes. Transportation modeling performed for this Plan indicates LOS conditions at "E" and "F" at intersections on Paseo del Norte and Unser under development build-out. Therefore, the suggested LOS for Volcano Heights is "E" for transportation. An important policy issue related to schools is the "lag time" between the construction of residences and the availability of public facilities to serve the development. In order to address this issue, the City and County should consider the experience of other local government where they allow a average enrollment-to-capacity level for schools of 130%.
- Current and projected transportation and schools facilities in the Volcano Heights Area as contained in the City's CIP, the MRCOG Metropolitan Transportation Plan (MTP), and the APS Facilities Master Plan. These capital planning documents must be consistent with the phasing and timing of development called for here.
- The point in the development approval process where the adequacy of roadway and school capacity must to be determined.
- Methods for reserving roadway and school capacity for approved development proposals.

Linking Residential Development Approval to School Facilities

Appropriate school locations are shown on the Land Use Plan. To meet current needs, APS planning and design for the new high school is well underway. The middle school that is shown on the Land Use Plan will be needed to meet demand generated from both Volcano Heights and from areas outside of the planning area. Both the high school and middle school are located on land that is currently owned by the State of New Mexico.

The Land Use Plan shows five elementary schools. The number of schools is based on student generation rates typical of suburban areas and APS school size standards. Importantly, the number of elementary schools shown is based on the minimum average density requirements, which is consistent with current market trends. If market support for dense housing was to increase appreciably, an additional elementary school might be needed.

The locations for elementary schools are based on a number of factors including access, proximity to trails, and adjacency to Village Centers and the Town Center (without displacing dense urban uses that can take best advantage of transit and conveniences contained in these Centers).

In **Exhibit 32** "***Elementary Schools and Service Areas***," each service area will generate enough students to fill one elementary school of about 650 students. The service areas have been configured to minimize the number of students who must cross limited-access arterials to get to school.

Based upon the Phasing Diagram, Woodmont Elementary and Rosa Parks Elementary would be built first, and would serve projects that have already been entitled (The Trails, La Cuentista, Vista Vieja and SAD 227), as well as housing built in SAD 228 and subsequent phases of The Trails. As the number of students generated in all of these areas combined may exceed the capacity of two elementary schools, it is likely that the next phase of school construction would lead with La Cuentista School and/or Rainbow School. Demand for Kimmick Elementary is likely to emerge later and concurrently with the Town Center area.

It is important to recognize that the Elementary School and Service Area diagram is a guide that must be integrated into the APS facilities master plan and funding program.

The boundary areas of the elementary schools and the phasing of their development shall be used to organize residential development in Volcano Heights. The City of Albuquerque already has adopted policy contained in Bill No. F/S R-05-297 which set the following regulation: "The approval of residential subdivisions and zone changes to residential or higher density residential zoning should only be allowed through careful consideration . . . and when APS has provided a viable solution for affected schools". This may be replaced with the following policy language in Bill No. R-06-74: "All pre-

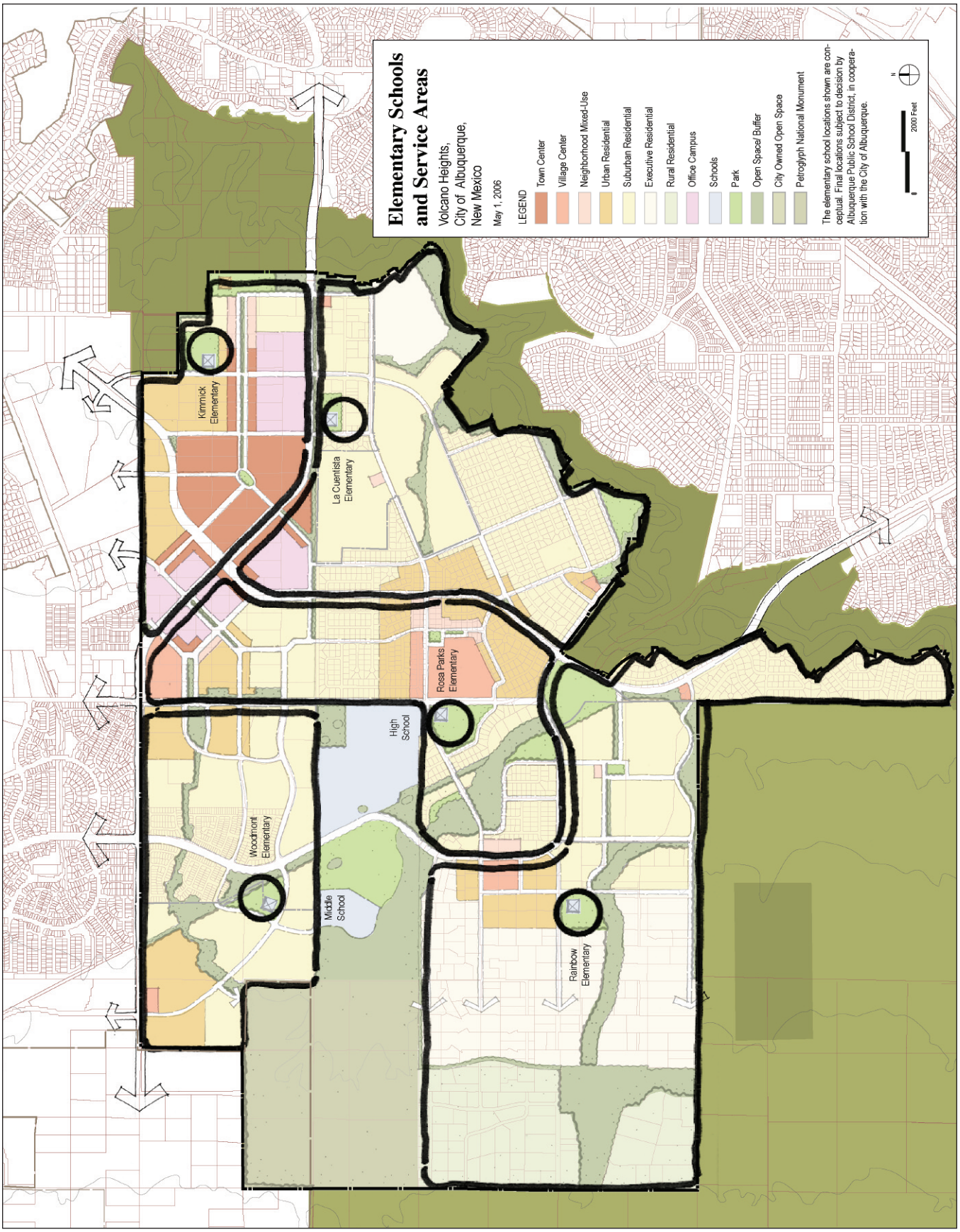
Elementary Schools and Service Areas
Volcano Heights, City of Albuquerque, New Mexico
May 1, 2006
LEGEND
Town Center
Village Center
Neighborhood Mixed-Use
Urban Residential
Suburban Residential
Executive Residential
Rural Residential
Office Campus
Schools
Park
Open Space/ Buffer
City Owned Open Space
Petroglyph National Monument
The elementary school locations shown are conceptual. Final locations subject to decision by Albuquerque Public School District, in cooperation with the City of Albuquerque.
N
2000 Feet
Kimmick Elementary
La Cuentista Elementary
Rosa Parks Elementary
High School
Middle School
Woodmont Elementary
Rainbow Elementary

Exhibit 32

liminary plats and final plats approved after October 31, 2006 involving residential lots, single-family or multi-family residential land use, must evidence written approval by APS in accordance with APS policy and procedures. No preliminary or final plat approval will be granted by the City for any subdivision containing any residential component without the prior written approval of APS." In either case, the City has an Adequate Public Facilities regulation related to the capacity of school facilities.

It is recommended that the City APF regulations be implemented through the following steps:

- APS produces a school facilities Capital Improvement Program that contains school Level of Service (LOS) standards addressing such issues as enrollment capacity at different school levels, facilities, number of students per classroom, and so on.
- The plan for new schools must be integrated with the City of Albuquerque's Comprehensive Plan and the Planned Growth Strategy. More specifically, the schools Capital Program shall:
    - Be coordinated with the City's adopted Land Use Assumptions for growth (which Assumptions must be modified by the City to incorporate the Volcano Heights Plan);
    - Establish the demographic relationship between new residential construction and the number of students contained within the households in these new structures both at the time of occupancy and over time.
- The APS school facilities Capital Improvement Program shall identify the schools contained in the Volcano Heights Plan, reflect their Plan location and boundary area, enrollment, number of households served, cost, and time frame in which they are planned to be constructed consistent with the Volcano Heights Plan phasing and timing assumptions.
- It is recognized that the Albuquerque Public Schools does not have sufficient financial resources to construct school facilities to meet the current demand. The school facilities Capital Improvement Program shall allocate a percent of total cost (or its equivalent dollar value) to each school that shall be met by (a) Albuquerque Public Schools' property tax revenues, and (b) other financial sources such as voluntary developer contributions, State of New Mexico grants, and so on.
- When the City receives a request for approval of a subdivision, or site plan for residential development, or zone change to residential or higher density residential, the City shall provide a conditional approval that becomes effective when the Albuquerque Public Schools certifies in writing, by referring to the standards identified above, that area schools will timely be available to meet the demand created by a specific new development. It is suggested that the final solicitation/assembly of resources from public sources and developers occur when approximately 50% of the residences within the school boundary area, sufficient to provide the student base for a new school have received conditional approval from the City.
- The Albuquerque Public Schools must have reasonable assurance of sufficient present and future revenues from guaranteed sources to build the new school facilities prior to certifying in writing that area schools will timely be available.

Consequently, residential development will be "stacked" by elementary school boundary areas until the proximate number of residence to be built to supply the students for a new school have received conditional City approval. APS then will authorize development activities to build the school and the homes will be permitted by the City. Students requiring school space in advance of new facilities will be handled by somewhat exceeding design capacity at existing, nearby schools. As a result, residential development will be phased and timed consistent with the urban growth management program.

Linking Development to Roadway Capacity.

The City of Albuquerque, together with the Mid Region Council of Governments (MRCOG), the Albuquerque Metropolitan Flood Control Authority, and the Albuquerque Bernalillo County Water Authority, provide a set of facilities and services needed to support new development, including water, wastewater, storm drainage, streets, parks, community center, libraries and so on.

The provision of these services will be coordinated in relation to the growth phasing and timing plan though City Adequate Public Facilities regulations and reviews related to roadways. The City of Albuquerque will organize the provision of these infrastructure items and services by its own agencies and others consistent with the growth plan. The critical link will be the opening of transportation capacity related to arterial and collector streets.

The APF system related to roadways will involve facility demand and capacity needs, which, in the Volcano Heights Area, will be based upon streets included in adopted capital programs that have an identified funding source and that will add capacity, the capacity required by development, and the timing of their construction.

It will be necessary to develop the administrative procedures for an Adequate Public Facilities system in order to fully implement the system within City government.

4. Parks, Open Space, Storm Drainage Acquisition

The Volcano Heights Plan (see VI **Open Space**) provides a detailed specification of open space, parks, and storm drainage properties needed within the area. These properties were identified by location and market data on recent sales was obtained by the Planning Team. The table below contains this break-down by category together with total acreages and recommended responsibilities/funding sources for acquisition.

Table 15: Open Space, Parks and Drainage Funding

Location and Purpose	Estimated Acreage	Recommended Funding Source
Open Space		
Monument Buffer – SAD 228 Area	38.1	Impact Fees / State of N.M.
Monument Buffer – Piedras Marcadas	25.8	Impact Fees / State of N.M.
Northern Portion of North Geologic Window – Petroglyph National Monument	120.0	City of Albuquerque Capital Improvement Program
State of N.M. Holdings – Archeological Sites	146.9	City Open Space Trade Lands
Parks		
Co-located Park / School Sites	57.4	Impact Fees
Storm Drainage		
North Boca Negra Arroyo	53.6	Impact Fees
Middle Boca Negra Arroyo	36.6	Impact Fees

The possible funding sources include development Impact Fees for Open Space / Parks / Trails and for Storm Drainage; the City's Capital Improvement Program, City Open Space Trade Lands, and State of New Mexico Capital Grants. It is assumed that the State of New Mexico may be willing to bear part of the cost of expanding the Escarpment edge of the Petroglyph National Monument because of its national importance. It also is assumed that the City will bear the pre-existing responsibility for completing the acquisition of the North Geologic Window in Petroglyph National Monument.

The land to be acquired, funding sources, acreage, and current estimated costs are included in the following table.

Table 16: Open Space, Parks and Drainage Funding

Purpose and Funding Source	Estimated Acreage	Estimated Cost
Open Space		
Impact Fees / State of New Mexico	63.9	$14.7 mm
City Capital Improvement Program	120.0	$4.2 mm
City Open Space Trade Lands	146.9	Trade
Parks		
Impact Fees	57.4	$4.2 mm
Storm Drainage		
Impact Fees	4.2	$4.1 mm

It should be noted that most of these dollar resources are unavailable at present. Impact fees are collected as building permits are pulled, relatively late in the development process. The recommended funding by the State of New Mexico is based on future legislative action. In turn, the City's experience with the acquisition of open space is that prices escalate significantly over time. It is recommended that the City attempt to acquire these properties ahead of development in the area. This may require advancing funds from public sources ahead of collections. Delay of purchases will result in much higher acquisition costs and, in turn, will alter the assumptions in the table above, possible involving other sources of funds such as SAD assessments, Tax Increment Financing, and Public Infrastructure Districts.

5. Development Approvals

It is intended that development reviews for plans that are consistent with the standards contained in the Volcano Heights Sector Plan be simplified.

The fragmentary ownership of land on most of the property approximately south of a line drawn along the north side of the State Land across the Plan area, however, will require more extensive planning efforts. It is quite likely that Special Assessment Districts will be needed there to address such issues as locally serving streets, water and sewer, hydrology improvements, and platting. It is reasonable that the SAD Plans should be integrated with broader master planning efforts to address the standards and incentives of this Plan such as density bonuses, Conservation Easements, Building Envelopes, architectural and landscaping standards and so on.

Moreover, the coherence of the Town Center and the Village Center areas (also including Urban Residential, Office Campus, and Neighborhood Mixed Use zones adjacent to the centers) calls for a more fine-grained and integrated Master Development Plans.

The table (right) indicates the separate planning efforts recommended and the suggested review mechanism for these plans. These plans must be consistent with the Volcano Heights Sector Plan to qualify for expedited review as identified in the table.

Table 17

Planning Area	Review Mechanism
Town Center (including Office Campus, Urban Residential, Neighborhood Mixed Use, Park and School Site Areas)	EPC
Volcano Cliffs Village Center (including Neighborhood Mixed Use, Urban Residential, Park and School Site)	EPC & SAD
Universe Village (including Urban Residential)	Planning Director & SAD
Rainbow Village (including Neighborhood Mixed Use and Urban Residential)	Planning Director
Volcano Cliffs Lands (including Suburban Residential, Park and School site, Open Space, small Village Center and Urban Residential area, property located on the east and west side of the Volcano Cliffs Village Center)	Planning Director & SAD
Longford Homes Area (not including the Universe Village, but from Universe to the Plan boundary on the west)	Planning Director
Executive Residential Area	Planning Director & SAD
Rural Residential Area	Planning Director & SAD

Plans submitted that are inconsistent with the regulations contained in the Volcano Heights Sector Plan are subject to the Sector Plan amendment process.

6. Amendments to Existing Plans

The Volcano Heights Plan contains elements that require subsequent amendments to several adopted Plans and incorporation into future plans and programs. The elements of the Volcano Heights Plan, upon adoption by the City, are assumed to amend existing City Plans. City and other staff are encouraged to take the actions needed to incorporate these changes into the appropriate plans and programs.

Affected are the following:

- Long Range Major Street Plan,
- Long Range High Capacity Transit Plan,
- Trails and Bikeways Plan,
- Unser Blvd Design Standards as contained in Bill No. F/S R-455, Enactment No. 169-1989,
- PGS Land Use Assumptions,
- Impact Fee Capital Improvement Program,
- City of Albuquerque Capital Improvement Program,
- Service Area Boundaries and capital plan of the Albuquerque / Bernalillo County Water Authority,
- Albuquerque Public Schools Facilities Master Plan
- Albuquerque/ Bernalillo County Comprehensive Plan (Centers and Corridors) to include the Town Center as an Activity Center

Appendix

Native Plant List A

List of Plant Species of Petroglyph National Monument - Plants found by Bleakly during a survey from August 1994 through September 1995. One hundred and ninety-two (192) plants from 40 families were identified. Arrangement is alphabetical by family, genus, and species with some synonyms and common names. An asterick (*) before the name indicates plants listed in Barlow-Irick (1993). Nomenclature according to Kartesz (1994). Common names from various sources. Number of species in each family are in parentheses after family name. A "pound sign" (#) indicates that a voucher is housed at the UNM Herbarium.

ADIANTACEAE Maidenhair Fern Family (1)
Cheilanthes feei T. Moore SLENDER LIPFERN #

AGAVACEAE Agave or Yucca Family (1)
Yucca glauca Nutt. SMALL SOAPWEED

AMARANTHACEAE Pigweed Family (3)
Amaranthus acanthochiton Sauer GREENSTRIPE #
Amaranthus wrightii S. Wats. WRIGHT'S AMARANTH #
Tidestroemia lanuginosa (Nutt.) Standl. WOOLLY TIDESTROMIA

ANACARDIACEAE Sumac Family (1)
Rhus trilobata Nutt. SKUNKBUSH, SKUNKBUSH SUMAC

APIACEAE (=UMBELLIFERAE) Parsley or Carrot Family (1)
Cymopterus acaulis (Pursh) Raf. var. *fendleri* (Gray) Goodrich (*Cymopterus fendleri* Gray) FENDLER SPRINGPARSLEY #

ASCLEPIADACEAE Milkweed Family (1)
Asclepias subverticillata (Gray) Vail WHORLED MILKWEED

ASTERACEAE (=COMPOSITAE) Sunflower Family (42)
Acourtia nana (Gray) Reveal & King (*Perezia nana* Gray) DWARF DESERT HOLLY, DWARF DESERTPEONY #
Aphanostephus ramosissimus DC. PLAINS DOZEDAISY #
Artemisia bigelovii Gray BIGELOW'S SAGEBRUSH #
Artemisia filifolia Torr. SANDSAGE, SAND SAGEBRUSH

Artemisia frigida Willd. FRINGED SAGE

Artemisia ludoviciana Nutt. ssp. *albula* (Woot.) Keck
WHITE SAGEBRUSH #

* *Bahia absinthifolia* Benth. #

* *Bahia dissecta* (Gray) Britt.

Bahia pedata Gray BLUNTSCALE BAHIA #

Baileya multiradiata Harvey & Gray *ex* Gray DESERT MARIGOLD #

* *Berlandiera* lyrata Benth.

Brickellia californica (Torr. & Gray) Gray
CALIFORNIA BRICKELLBUSH #

Chaetopappa ericoides (Torr.) Nesom (*Leucelene ericoides*(Torr.) Greene)
WHITE ASTER

* *Chrysothamnus nauseosus* (Pallas *ex* Pursh) Britt. ssp. *bigelovii* (Gray)
Hall & Clements #

Chrysothamnus pulchellus (Gray) Greene ssp. *pulchellus*
SOUTHWESTERN RABBITBRUSH #

Conyza canadensis (L.) Cronq. CANADIAN HORSEWEED

* *Gaillardia pinnatifida* Torr. #

Gaillardia pulchella Foug. FIREWHEEL

Gutierrezia sarothrae (Pursh) Britt. & Rusby BROOM SNAKEWEED #

Helianthus petiolaris Nutt. PRAIRIE SUNFLOWER

Hymenopappus flavescens Gray var. *canotomentosus* Gray
YELLOW-FLOWERED WHITE
RAGWEED, COLLEGEFLOWER #

Macheranthera canescens (Pursh) Gray HOARY TANSYASTER #

* *Machaeranthera gracilis* (Nutt.) Shinners
`(*Haplopappus gracilis* (Nutt.) Gray) #

Machaeranthera pinnatifida (Hook.) Shinners
(*Haplopappus spinulosus* (Pursh) DC.) LACY TANSYASTER

Malacothrix fendleri Gray FENDLER DESERTDANDELION #

Melampodium leucanthum Torr. & Gray PLAINS BLACKFOOT #

* *Microseris* sp. *Palafoxia sphacelata* (Nutt. *ex* Torr.) Cory OTHAKE #

Parthenium incanum Kunth MARIOLA #

Pectis angustifolia Torr. var. *angustifolia* NARROWLEAF PECTIS #

Psilostrophe tagetina (Nutt.) Greene WOOLLY PAPERFLOWER

Sanvitalia abertii Gray ABERT'S CREEPING ZINNIA #

Senecio flaccidus Less. var. *flaccidus* (*Senecio douglasii* DC. ssp. *longilobus*
(Benth.) L. Benson THREADLEAF GROUNDSEL #

Senecio multicapitatus Greenm. *ex* Rydb. RAGWORT GROUNDSEL #

Senecio riddellii Torr. & Gray RIDDELL'S RAGWORT OR
GROUNDSEL #

Stephanomeria pauciflora (Torr.) A. Nels.
BROWNPLUME WIRELETTUCE #

Thelesperma megapotamicum (Spreng.) Kuntze
HOPI TEA, GREENTHREAD

Thymophylla acerosa (DC.) Strother (*Dyssodia acerosa* DC.) PRICKLYLEAF DOGWEED #

Verbesina enceliodes (Cav.) Benth. & Hook. f *ex* Gray GOLDENCROWNBEARD, COWPEN DAISY

Xanthium strumarium L. COCKLEBUR

Zinnia grandifolia Nutt. ROCKY MOUNTAIN ZINNIA #

BIGNONIACEAE Bignonia Family (1)

Chilopsis linearis (Cav.) Sweet DESERT WILLOW

BORAGINACEAE Borage Family (4)

Cryptantha cinerea (Greene) Cronq. var. *cinerea* (*C. jamesii* Payson var. *multicaulis* (Torr.) Payson) JAMES' CATSEYE #

Cryptantha crassisepala (Torr. & Gray) Greene var. *elachantha* I.M. Johnst. THICKSEPAL CATSEYE #

Heliotropium convolvulaceum (Nutt.) Gray PHLOX HELIOTROPE

Lappula occidentalis (S. Wats.) Greene var. *occidentalis* (*L. redowskii* (Hornem.) Greene) FLATSPINE STICKSEED #

BRASSICACEAE (=CRUCIFERAE) Mustard Family (7)

Descurainia pinnata (Walt.) Britt. WESTERN TANSYMUSTARD #

Dimorphocarpa wislizenii (*Dithyrea wislizenii*) SPECTACLE POD; TOURISTPLANT

Lepidium lasiocarpum Nutt. var. *lasiocarpum* SHAGGYFRUIT PEPPERWEED #

* *Lepidium montanum* Nutt.

Lesquerella fendleri (Gray) S. Wats. FENDLER BLADDERPOD #

CACTACEAE Cactus Family (6)

Echinocereus fendleri (Engelm.) F. Seitz PINKFLOWERED HEDGEHOG CACTUS

Escobaria vivipara (Nutt.) Buxbaum (*Coryphantha vivipara* (Nutt.) Britt. & Rose) SPINYSTAR

Opuntia clavata Engelm. CLUB CHOLLA

Opuntia imbricata (Haw.) DC. TREE or WALKINGSTICK CHOLLA

Opuntia phaeacantha Engelm. BROWNSPINE PRICKLYPEAR

Opuntia polyacantha Haw. PLAINS PRICKLYPEAR

CAPPARACEAE Caper Family (1)

Polanisia dodecandra (L.) DC. ssp. trachysperma (Torr. & Gray) Ilitis SANDYSEED CLAMMYWEED #

CHENOPODIACEAE Goosefoot Family (5)

Atriplex canescens (Pursh) Nutt. FOURWING SALTBUSH

* *Chenopodium dessicatum* A. Nels. #

Chenopodium fremontii S. Wats. FREMONT'S GOOSEFOOT #
Krascheninnikovia lanata (Pursh) Guldenstaedt (*Ceratoides lanata* (Pursh) J.T. Howell; *Eurotia*
lantata (Pursh) Moq.) WINTERFAT

CUCURBITACEAE Gourd Family (1)
Cucurbita foetidissima Kunth COYOTE or MISSOURI GOURD

CUPRESSACEAE Cypress Family (1)
Juniperus monosperma (Engelm.) Sarg. ONESEED JUNIPER

EPHEDRACEAE Jointfir Family (1)
Ephedra torreyana S. Wats. TORREY JOINTFIR or MORMON TEA #

EUPHORBIACEAE Spurge Family (7)
Chamaesyce parryi (Engelm.) Rydb.
PARRY'S SANDMAT or SPURGE #
Chamaesyce serpylifolia (Pers.) Small
THYMELEAF SANDMAT or SPURGE #
Chamaesyce serrula (Engelm.) Woot. & Standl.
SAWTOOTH SANDMAT or SPURGE #
Croton texensis (Klotzsch) Muell.-Arg. TEXAS CROTON #
Euphorbia dentata Michx. TOOTHED SPURGE #
* *Tragia ambylodonta* (Muell.-Arg.) Pax & K. Hoffmann
Tragia ramosa Torr. BRANCHED NOSEBURN

FABACEAE (=LEGUMINOSAE) Bean or Pea Family (14)
Astragalus amphioxys Gray var. *amphioxys* CRESCENT MILKVETCH #
Astragalus ceramicus Sheld. var. *ceramicus* PAINTED MILKVETCH #
Astragalus lentiginosus Dougl. var. *diphysus* (Gray) Jones SPECKLED POD MILKVETCH #
Astragalus nuttallianus DC. SMALLFLOWERED MILKVETCH #
Caesalpinia jamesii (Torr. & Gray) Fisher JAMES' HOLDBACK
Dalea compacta Spreng. var. *compacta*
COMPACT PRAIRIECLOVER #
Dalea formosa Torr. FEATHERPLUME
Dalea lanata Spreng. var. *terminalis* (Jones) Barneby
WOOLLY PRAIRIECLOVER #
Dalea nana Torr. *ex* Gray var. *carnescens* Kearney & Peebles
DWARF PRAIRIECLOVER #
Dalea scariosa S. Wats. (*Petalostemon scariosa* (S. Wats.) Wemple)
ALBUQUERQUE PRAIRIECLOVER #
Hoffmannsegia glauca (Ortega) Eifert INDIAN RUSHPEA
Pediomelum hypogaeum (Nutt.) Rydb.
(*Psoralea hypogaea* Nutt.) SCURFPEA #

Psorothamnus scoparius (Gray) Rydb. (*Dalea scoparia* Gray)
BROOM DALEA; PURPLE SAGE

FUMARIACEAE Fumitory Family (1)

Corydalis aurea Willd. GOLDEN CORYDALIS, SCRAMBLED EGGS, GOLDENSMOKE, BUTTER AND EGGS

GROSSULARIACEAE Gooseberry Family (1)

Ribes sp. GOOSEBERRY

HYDROPHYLLACEAE Waterleaf Family (4)

Nama hispidum Gray BRISTLY NAMA

Phacelia crenulata Torr. var. *crenulata*
CLEFTLEAF WILDHELIOTROPE #

Phacelia integrifolia Torr. GYPSUM SCORPIONWEED #

Phacelia ivesiana Torr. IVES PHACELIA #

LINACEAE Flax Family (2)

Linum aristatum Engelm. BRISTLE FLAX

**Linum australe* Heller #

LOASACEAE Stickleaf Family (2)

Mentzelia albicaulis (Dougl.) Dougl. WHITESTEM BLAZINGSTAR

Mentzelia pumila (Nutt.) Torr. & Gray DWARF MENTZELIA #

MALVACEAE Mallow Family (5)

Sida abutifolia P. Mill. (*Sida filicaulis* Torr. & Gray)
SPREADING FANPETALS #

* *Sida neomexicana* Gray

Spheralcea angustifolia (Cav.) G. Don ssp. *lobata* (Woot.) Kearney
COPPER GLOBEMALLOW #

Spheralcea hastulata Gray (*Spheralcea subhastata* Coult.)
SPEAR GLOBEMALLOW #

Spheralcea incana Torr. *ex* Gray GRAY GLOBEMALLOW #

NYCTAGINACEAE Four O-clock Family (7)

Abronia fragrans Nutt. *ex* Hook.
FRAGRANT WHITE SAND VERBENA

* *Allionia choysia* Standl. #

Allionia incarnata L. TRAILING WINDMILLS #

Boerhavia spicata Choisy (*B. torreyana* (S. Wats.) Standl.)
CREEPING SPIDERLING #

* *Mirabilis glabra* (S. Wats.) Standl. (*Oxybaphus glaber* S. Wats.) #

Mirabilis linearis (Pursh) Heimerl NARROWLEAF FOUR O'CLOCK

Selinocarpus diffusus Gray SPREADING MOONPOD #

OLEACEAE Olive Family (1)

Menodora scabra Gray ROUGH MENODORA

ONAGRACEAE Evening Primrose Family (2)

Gaura coccinea Nutt. *ex* Pursh SCARLET BEEBLOSSOM

Oenothera pallida Lindl. PALE EVENINGPRIMROSE #

OROBANCHACEAE Broomrape Family (1)

Orobanche ludoviciana Nutt. (*O. multiflora* Nutt.) LOUISIANA BROOMRAPE #

PEDALIACEAE Sesame Family (1)

Proboscidea louisianica (P. Mill.) Thelleng COMMON DEVILSCLAW, DEVILSHORN, RAM'S HORN

PLANTAGINACEAE Plantain Family (1)

Plantago patagonica Jacq. (*P. purshii* Morris) WOOLLY PLANTAIN #

Plantago lanceolota L. NARROWLEAF PLANTAIN

POACEAE (=GRAMINAE) Grass Family (42)

Aristida adscensionis L. SIXWEEKS THREEAWN #

* *Aristida arizonica* Vasey

Aristida havardii Vasey HAVARD'S THREEAWN #

* *Aristida pansa* Woot. & Standl.

Aristida purpurea Nutt. var. *fendleriana* (Steud.) Vasey FENDLER'S THREEAWN #

* *Aristida purpurea* Nutt. var. *neallyi* (Vasey) Allred #

* *Aristida purpurea* Nutt. var *purpurea* #

* *Bothriochloa barbinodis* (Lag.) Herter #

Bothriochloa laguroides (DC.) Herter ssp. *torreyana* (Steud.) Allred & Gould (*Andropogon saccharoides* Sw.) SILVER BEARDGRASS or SILVER BLUESTEM #

Bouteloua aristoides (H.B.K.) Griseb. var. *aristoides* NEEDLE GRAMA #

Bouteloua barbata Lag. var. *barbata* SIXWEEKS GRAMA #

Bouteloua curtipendula (Michx.) Torr. SIDEOATS GRAMA

Bouteloua eriopoda (Torr.) Torr. BLACK GRAMA #

Bouteloua gracilis (Willd. *ex* Kunth) Lag. *ex* Griffiths BLUE GRAMA

Bouteloua hirsuta Lag. HAIRY GRAMA

* *Cenchrus carolinianus* Walt. (*Cenchrus incertus* M.A. Curtis)

* *Digitaria californica* (Benth.) Henr.#

Elymus elymoides (Raf.) Swezey (*Sitanion hystrix* (Nutt.) J.G. Sm.; *Elymus longifolius* (J.G. Sm.) Gould) SQUIRRELTAIL #

Enneapogon desvauxii Beauv. NINEAWN PAPPUSGRASS #

Erioneuron pulchellum (Kunth) Tateoka (*Dasyochloa pulchella* (Kunth) Willd. *ex* Rydb.) FLUFFGRASS, LOW WOOLLYGRASS #

Hilaria jamesii (Torr.) Benth. (*Pleuraphis jamesii* Torr.) GALLETA #

* *Koeleria macrantha* (Ledeb.) J.A. Schultes
(*Koeleria cristata auct. p.p. non* Pers.)
* *Lycurus phleoides* Kunth
Monroa squarrosa (Nutt.) Torr. (*Munroa squarrosa* (Nutt.) Torr.)
FALSE BUFFALOGRASS #
* *Muhlenbergia arenacea* (Buckl.) A.S. Hitchc.
Muhlenbergia arenicola Buckl. SAND MUHLY #
Muhlenbergia porteri Scribn. BUSH MUHLY #
Muhlenbergia pungens Thurb. SANDHILL MUHLY #
Muhlenbergia torreyi (Kunth) A.S. Hitchc. *ex* Bush RING MUHLY
Oryzopsis hymenoides (Roemer & J.A. Schultes)
Ricker *ex* Piper INDIAN RICEGRASS
* *Poa bigelovii* Vasey & Scribn.
Scleropogon brevifolius Phil. BURROGRASS #
Setaria leucopila (Scribn. & Merr.) K. Schum.
STREAMBED BRISTLEGRASS #
* *Setaria lutescens* (Weigel) F.T. Hubbard ?
Sporobolus contractus A.S. Hitchc. SPIKE DROPSEED
Sporobolus cryptandrus (Torr.) Gray SAND DROPSEED #
* *Sporobolus flexuosus* (Thurb. *ex* Vasey) Rydb. #
Sporobolus giganteus Nash GIANT DROPSEED #
Stipa comata Trin & Rupr. var. *comata* NEEDLEANDTHREAD #
* *Stipa neomexicana* (Thurb. *ex* Coult.) Scribn.
Stipa spartea Trin. PORCUPINEGRASS #
Vulpia octoflora (Walt.) Rydb. (*Festuca octoflora* Walt.)
SIXWEEKS FESCUE #

POLEMONIACEAE Phlox Family (1)
Ipomopsis pumila (Nutt.) V. Grant DWARF GILIA #

POLYGONACEAE Knotweed Family (4)
Eriogonum abertianum Torr. var. *abertianum* ABERT BUCKWHEAT #
* *Eriogonum effusum* Nutt.
Eriogonum polycladon Benth. SORREL BUCKWHEAT #
Eriogonum rotundifolium Benth. ROUNDLEAF BUCKWHEAT #
Rumex hymenosepalus Torr. CANAIGRE; DOCK #

PORTULACACEAE Purslane Family (1)
Portulaca sp. PURSLANE

RANUNCULACEAE Crowfoot Family (1)
Delphinium sp. LARKSPUR

ROSACEAE Rose Family (1)
Fallugia paradoxa (D. Don) Endl. *ex* Torr. APACHE PLUME

SALICACEAE Willow Family

Salix sp .WILLOW

SCROPHULARIACEAE Figwort Family (3)

Epixiphium wislizenii (Engelm. *ex* Gray) Munz (*Maurandya wislizenii* Englem. *ex* Gray) BALLOONBUSH #

Penstemon ambiguus Torr. GILIA PENSTEMON or BEARDTONGUE

* *Penstemon* sp.

SOLANACEAE Potato Family (6)

Chamaesaracha coronopus (Dunal) Gray GREENLEAF FIVE EYES #

Datura inoxia P. Mill. THORNAPPLE; JIMSONWEED #

Lycium pallidum Miers PALE WOLFBERRY

Nicotiana trigonophylla Dunal DESERT TOBACCO #

Physalis acutifolia (Miers) Sandw. (*P. wrightii* Gray) SHARPLEAF GROUNDCHERRY #

Solanum elaeagnifolium Cav. SILVERLEAF NIGHTSHADE

VERBENACEAE Vervain Family (2)

Aloysia wrightii Heller *ex* Abrams WRIGHT'S BEEBRUSH #

* *Tetraclea coulteri* Gray #

ZYGOPHYLLACEAE Caltrop Family (2)

Kallstroemia sp. CALTROP